GRADE 12 DIPLOMA EXAMINATION

Mathematics 30

June 1989

Alberta
EDUCATION

GRADE 12 DIPLOMA EXAMINATION
MATHEMATICS 30

DESCRIPTION

Time: 2½ hours

Total possible marks: 65

This is a **CLOSED-BOOK** examination consisting of three parts:

PART A: 45 multiple-choice questions each with a value of 1 mark.

PART B: Seven machine-scorable open-ended questions each with a value of 1 mark.

PART C: Three written-response questions for a total of 13 marks.

GENERAL INSTRUCTIONS

All numbers used in this examination are to be considered as EXACT numbers and are not the result of a measurement.

A tear-out formula and z-score sheet is included in the booklet.

All students are expected to provide their own approved scientific calculator.

NOTE: The perforated pages at the back of this booklet may be torn out and used for your rough work. NO MARKS will be given for work done on the tear-out sheets.

DO NOT FOLD EITHER THE ANSWER SHEET OR THE EXAMINATION BOOKLET

The presiding examiner will collect the answer sheet and examination booklet for transmission to Alberta Education.

JUNE 1989

PART A

INSTRUCTIONS

There are 45 multiple-choice questions with a value of one mark each in this section of the examination. All numbers used in the questions are to be considered as EXACT numbers and are not the result of a measurement. Use the separate answer sheet provided and follow the specific instructions given.

Read each question carefully and decide which of the choices BEST completes the statement or answers the question. Locate that question number on the answer sheet and fill in the space that corresponds to your choice. USE AN HB PENCIL ONLY.

Example

This examination is for the subject area of

A. Biology
B. Physics
C. Chemistry
D. Mathematics

Answer Sheet

A	B	C	D
①	②	③	●

If you wish to change an answer, please erase your first mark completely.

NOTE: The perforated pages at the back of this booklet may be torn out and used for your rough work. NO MARKS will be given for work done on the tear-out sheets.

WHEN YOU HAVE COMPLETED PART A, PROCEED DIRECTLY TO PART B

DO NOT TURN THE PAGE TO START THE EXAMINATION UNTIL TOLD TO DO SO BY THE PRESIDING EXAMINER

1. In ΔABC, if $\angle A = 37°$, $\angle B = 29°$, and $c = 5.2$ cm, then the value of b correct to the nearest tenth of a centimetre is

A. 4.2 cm
B. 3.4 cm
C. 2.8 cm
D. 1.3 cm

2. The exact value of $\dfrac{\sin^2 45° + \cos^2 45°}{\sin 60° \cos 30°}$ is

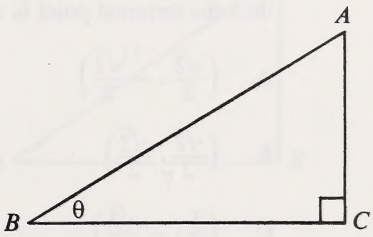
A. $\dfrac{3}{4}$

B. $\dfrac{2\sqrt{3}}{3}$

C. $\dfrac{4}{3}$

D. $\dfrac{4\sqrt{2}}{3}$

3. In ΔABC shown at the right, $BC = 12$ cm and $\tan\theta = \dfrac{2}{3}$. The area of this triangle is



A. 36 cm^2

B. 48 cm^2

C. 72 cm^2

D. 96 cm^2

4. The exact value of $\sin\left(\dfrac{11\pi}{3}\right)$ is

A. $\dfrac{\sqrt{3}}{2}$

B. $\dfrac{1}{2}$

C. $-\dfrac{1}{2}$

D. $-\dfrac{\sqrt{3}}{2}$

5. For $180° < \theta < 360°$, which of the primary trigonometric functions may have positive values?

A. $\tan\theta$ and $\cos\theta$
B. $\tan\theta$ and $\sin\theta$
C. $\cos\theta$ and $\sin\theta$
D. $\cos\theta$ only

6. Two airplanes leave the same airport in city A. One flies 75 km to city B and the other flies 245 km to city C. If the distance between B and C is 250 km, the angle between the flight paths of the airplanes correct to the nearest degree is

A. 80°

B. 85°

C. 95°

D. 100°

7. For the path of length $\frac{-9\pi}{4}$ on a unit circle, if the initial point is at (1, 0), then the terminal point is at

A. $\left(\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right)$

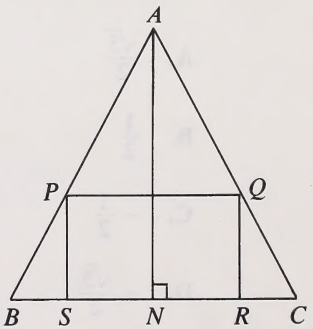
B. $\left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$

C. $\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$

D. $\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$

8. In ΔABC shown at the right, $AB = AC$, $BC = 8$, and $AN = 10$. If $SB = RC = y$, then the area of the rectangle $PQRS$ as a function of y is

A. $y(4 - y)$
B. $-2.5y(8 - y)$
C. $2.5y(8 + 2y)$
D. $2.5y(8 - 2y)$



9. If $4 \cos^2 \theta - 7 \cos \theta - 2 = 0$, $0° < \theta \leqq 360°$, then the measure of θ correct to the nearest degree is

A. 76°, 104°

B. 76°, 284°

C. 104°, 256°

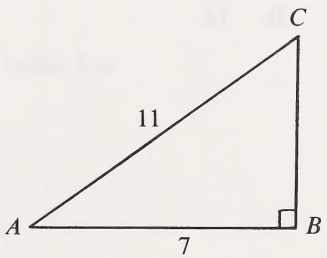
D. 256°, 284°

10. A golfer is standing 350 m from a hole on a golf course. His first drive of 210 m is 15° to the right of the direct line to that hole. The remaining distance to the hole correct to the nearest metre is

A. 203 m
B. 157 m
C. 94 m
D. 54 m

11. In the triangle at the right, the measure of $\angle A$ correct to the nearest tenth of a radian is

A. 0.6 rad
B. 0.7 rad
C. 0.9 rad
D. 1.1 rad



12. The centre of the circle $x^2 + y^2 - 6y - 6 = 0$ is at

A. (0, 3)
B. (3, 0)
C. (0, −3)
D. (−3, 0)

13. The focus of a parabola is at $(-2, k)$ and the directrix is $x - 4 = 0$. The vertex is at

A. $(-8, k)$
B. $(-3, k)$
C. $(0, k)$
D. $(1, k)$

14. An ellipse is defined by $2x^2 + 6y^2 = p$, and the major axis is 6 units long. The value of p is

A. $\frac{2}{9}$

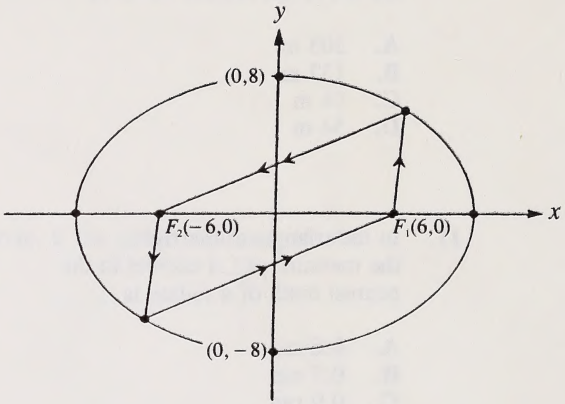
B. $\frac{2}{3}$

C. 18

D. 54

15. The perimeter of the parallelogram inscribed in the ellipse shown at the right is

A. 48
B. 40
C. 28
D. 14



16. The directrix of the parabola $y^2 = 8(x + 2)$ is

A. $x + 4 = 0$
B. $x + 6 = 0$
C. $x + 8 = 0$
D. $x + 10 = 0$

17. In an elliptical park, a fountain is located at one focus that is $30\sqrt{3}$ m from the centre. If the maximum distance across the park is 120 m, then the minimum distance across the park through its centre is

A. 30 m
B. 60 m
C. 108 m
D. 119 m

18. The equation of a hyperbola whose conjugate axis is 8 units long and whose foci are at $(-5, 0)$ and $(5, 0)$ is

A. $\frac{x^2}{9} - \frac{y^2}{16} = 1$

B. $\frac{x^2}{16} - \frac{y^2}{9} = -1$

C. $\frac{x^2}{39} - \frac{y^2}{64} = 1$

D. $\frac{x^2}{64} - \frac{y^2}{39} = -1$

19. The midpoint of segment AE is at $(3, 2)$. If A is at $(-5, 4)$, then E is at

A. $(-13, 6)$
B. $(-1, 3)$
C. $(4, -1)$
D. $(11, 0)$

20. The equation of a circle with centre $(-1, -3)$ and radius 5 is

A. $x^2 + y^2 + 2x + 6y + 5 = 0$

B. $x^2 + y^2 + 2x + 6y - 5 = 0$

C. $x^2 + y^2 - 2x - 6y - 15 = 0$

D. $x^2 + y^2 + 2x + 6y - 15 = 0$

21. The asymptotes of the hyperbola $4x^2 - 9y^2 = 36$ are

A. $y = \pm \frac{9}{4}x$

B. $y = \pm \frac{3}{2}x$

C. $y = \pm \frac{2}{3}x$

D. $y = \pm \frac{4}{9}x$

22. The locus of a set of points in a plane that are equidistant from a fixed point is

A. a circle
B. an ellipse
C. a parabola
D. a hyperbola

23. A parabola has a focus at $(0, -16)$ and a directrix of $y - 16 = 0$. The equation of this parabola is

A. $x^2 = -16y$

B. $y^2 = -16x$

C. $x^2 = -64y$

D. $y^2 = -64x$

24. The sum of all the integers between 21 and 150 that are divisible by 4 is

A. 2838
B. 2752
C. 2666
D. 2580

25. If the sum of the geometric series $x + 3x + 9x + \ldots + 3645$ is 5465, then the value of x is

A. 5
B. 4
C. 3
D. 2

26. Which of the following sequences is geometric?

A. $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \ldots, \frac{n}{n+1}, \ldots$

B. $-\frac{1}{2}, \frac{1}{3}, -\frac{1}{4}, \frac{1}{5}, \ldots, \frac{(-1)^n}{n+1}, \ldots$

C. $\frac{2}{3}, \frac{4}{5}, \frac{8}{7}, \frac{16}{9}, \ldots, \frac{2^n}{2n+1}, \ldots$

D. $\frac{2}{3}, -\frac{2}{9}, \frac{2}{27}, -\frac{2}{81}, \ldots, (-1)^{n+1}(2)\left(\frac{1}{3}\right)^n, \ldots$

27. The limit of the sequence $15,\ 7\frac{1}{2},\ 5,\ 3\frac{3}{4},\ \ldots,\ \frac{15}{n},\ \ldots,$ as $n \to \infty$ is

A. nonexistent
B. 15
C. 1
D. 0

28. The 10th term of the arithmetic sequence $\frac{3}{4},\ \frac{5}{6},\ \frac{11}{12},\ \ldots$ is

A. $\frac{43}{4}$

B. $\frac{5}{3}$

C. $\frac{19}{12}$

D. $\frac{3}{2}$

29. The $\lim_{n \to \infty} \left(\frac{3n^2 - 7n + 2}{4n} \right)$ is

A. nonexistent

B. 0

C. $\frac{3}{4}$

D. 3

30. On a recent test, John and Pat scored 53% and 83% respectively. If the mean score of the test is 65% and John's z-score is -1.6, then Pat's z-score is

A. 1.6
B. 2.0
C. 2.4
D. 2.6

31. Standard deviation is a measure of dispersion of data about the

A. median
B. range
C. mean
D. mode

32. A certain population has a standard deviation of σ with a mean of μ. Assuming a normal distribution, the percentage that lies within the interval between $\mu - 0.54\sigma$ and $\mu - 2.32\sigma$ is

A. 28.44%
B. 46.25%
C. 49.79%
D. 69.52%

33. A manufacturer of plastic earrings has determined that their masses are normally distributed with a mean of 12.4 g and a standard deviation of 2.0 g. If in a given week he makes 7500 earrings, how many will have a mass less than 11 g?

A. 1500
B. 1815
C. 1935
D. 2250

34. A bag of marbles contains 30 black, 20 white, 20 red, and 30 blue marbles. What is the probability that, if one marble is chosen at random, it would NOT be black?

A. $\frac{7}{8}$

B. $\frac{7}{10}$

C. $\frac{3}{8}$

D. $\frac{3}{10}$

35. A breeder has determined that the mean life expectancy of her dogs is 10.3 a with a standard deviation of 1.7 a. If a normal distribution is assumed and Karen purchases one of these dogs, what is the probability that it will live longer than 6.9 a?

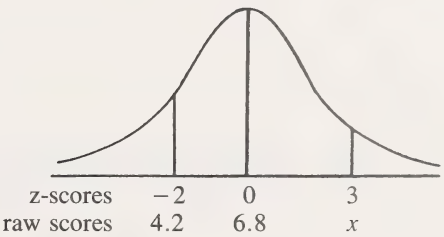
A. 0.4772
B. 0.6826
C. 0.9544
D. 0.9772

36. The number of hours an infant sleeps per day is normally distributed with a mean of 13.2 h and a standard deviation of 1.6 h. The probability that an infant will sleep between 12.8 h and 15.6 h per day is

A. 0.1056
B. 0.3349
C. 0.3944
D. 0.5319

37. The diagram at the right shows three z-scores and the corresponding raw scores. The value of x correct to the nearest tenth is

A. 8.1
B. 9.4
C. 10.7
D. 11.0



38. Which of the following is equivalent to the equation $\log_{10}(G) = 2\log_{10}(M) - \log_{10}(N)$?

A. $G = \frac{M^2}{N}$

B. $G = \frac{2M}{N}$

C. $G = M^2 - N$

D. $G = 2M - N$

39. The solution for the equation $9^{2x} = \left(\frac{1}{3}\right)^{x+6}$ is

A. 6

B. 2

C. $-\frac{4}{3}$

D. $-\frac{6}{5}$

40. When $3x^4 - x^2 + x - 5$ is divided by $x + 2$, the quotient is

A. $3x^3 + 6x^2 - 13x + 2$

B. $3x^3 - 6x^2 + 11x - 21$

C. $3x^3 - 6x^2 - 13x - 25$

D. $3x^3 - 7x^2 + 15x - 35$

41. If the graph of a third-degree polynomial function passes through (1, 4) and has x-intercepts of 2 and -3 only, the function could be

A. $y = x^3 - x^2 - 8x + 12$

B. $y = x^3 + x^2 - 6x + 8$

C. $y = x^3 + 4x^2 - 3x - 18$

D. $y = x^3 - 4x^2 - 3x + 18$

42. A factored form of the polynomial $(x^2 + x)^2 - 8(x^2 + x) + 12$ is

A. $x(x + 1)(x - 6)(x - 2)$
B. $(x + 1)(x - 2)(x + 2)(x + 3)$
C. $(x - 1)(x - 2)(x + 2)(x + 3)$
D. $(x - 1)(x - 2)(x + 2)(x - 3)$

43. The degree of the polynomial $(x + 2)^3 + (x^3 + 1)^2 + 7x^5$ is

A. 5
B. 6
C. 10
D. 14

44. If $P(x) = 3x^2 - ax + b$, $P(-1) = 14$, and $P(2) = 11$, then the values of a and b respectively are

A. 6 and 5
B. 4 and 7
C. -4 and 15
D. -10 and 21

45. The graph of $P(x) = -3(2x + 3)(x^2 - 4)$ has x-intercepts of

A. $3, 4, -\frac{3}{2}$

B. $2, 3, \frac{3}{2}$

C. $2, -2, -\frac{3}{2}$

D. $2, -2, 3, -\frac{3}{2}$

YOU HAVE NOW COMPLETED THE MULTIPLE-CHOICE SECTION OF THE EXAMINATION. PLEASE PROCEED TO PART B AND ANSWER THE MACHINE-SCORABLE OPEN-ENDED QUESTIONS.

PART B

INSTRUCTIONS

There are seven machine-scorable open-ended questions with a value of one mark each in this section of the examination. All numbers used in the questions are to be considered as EXACT numbers and are not the result of a measurement.

Read each question carefully.

Solve each question and write your answer correct to the nearest tenth.

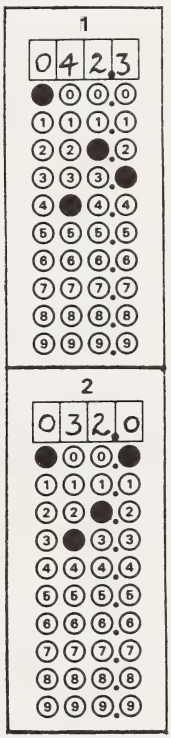
Record your answer on the answer sheet by writing it in the boxes of the corresponding answer field and by filling in one circle in EVERY column.

Sample Questions and Solutions

1. If θ is acute and $\sin \theta = 0.6735$, then the measure of θ correct to the nearest tenth of a degree is _____ .

   $\theta = 42.33777464...$

   RECORD 042.3



2. For the arithmetic series $-8 + (-5) + (-2) + \ldots + (85)$, the number of terms correct to the nearest tenth is _____ .

   $85 = -8 + (n - 1)(3)$

   $93 = 3n - 3$

   $n = 32$

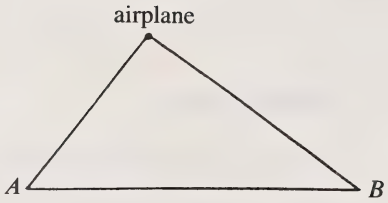
   RECORD 032.0

If you wish to change an answer, please erase your first mark completely.

NOTE: The perforated pages at the back of this booklet may be torn out and used for your rough work. NO MARKS will be given for work done on the tear-out sheets.

WHEN YOU HAVE COMPLETED PART B, PLEASE PROCEED DIRECTLY TO PART C.

1. At the same time, observers at A and B spot an airplane flying above and between them as shown in the diagram at the right. The straight-line distance to the airplane is 9.4 km from A and 12.8 km from B. If the angle of elevation of the airplane is 53° from A, then the angle of elevation from B correct to the nearest tenth of a degree is _____.



2. For the hyperbola $3x^2 - 8y^2 = 1$, the length of the conjugate axis correct to the nearest tenth is _____.

3. If the point $(-1, y)$ lies on the hyperbola $\frac{y^2}{9} - \frac{4x^2}{3} = 1$, then the positive value of y correct to the nearest tenth of a unit is _____.

4. The sum of the first six terms of the geometric series $\frac{1}{8} + \frac{1}{2} + 2 + \ldots$ correct to the nearest tenth is _____.

5. The results of an achievement test were normally distributed. A student received a raw score of 410 on the test for which the mean was 320 and the standard deviation was 60. If the results were translated to a normal distribution with a mean of 65 and a standard deviation of 12, then the student's score correct to the nearest tenth would become _____.

6. If $\log_n(a) = 3.6$ and $\log_n(b) = 2.7$, then $\log_n(ab)$ correct to the nearest tenth is _____.

7. If 2 is a zero of the polynomial $-2x^3 + kx^2 - 5x - 4$, then the value of k correct to the nearest tenth of a unit is _____.

YOU HAVE NOW COMPLETED THE MACHINE-SCORABLE OPEN-ENDED SECTION OF THE EXAMINATION. PLEASE PROCEED TO PART C AND ANSWER THE WRITTEN-RESPONSE QUESTIONS.

PART C

INSTRUCTIONS

There are three written-response questions for a total of 13 marks in this section of the examination. All numbers used in the questions are to be considered as EXACT numbers and are not the result of a measurement.

Please write your answers in the examination booklet as neatly as possible.

Show all pertinent calculations and formulas.

NOTE: The perforated pages at the back of this booklet may be torn out and used for your rough work. NO MARKS will be given for work done on the tear-out sheets.

START PART C IMMEDIATELY

FOR DEPARTMENT USE ONLY

(5 marks)

1. For the series defined by $\sum_{k=3}^{25} (4 - 2k)$, find

a) the common difference

The common difference is _____

b) the sum of the series

The sum of the series is _____

FOR DEPARTMENT USE ONLY

(4 marks)

2. Solve each of the following, correct to one decimal place.

a) $\log_3(z) = \frac{2}{3}$

The value of z is _____

b) $\log_5(6) = y$

The value of y is _____

c) $\log_x(8) = 4$

The value of x is _____

FOR DEPARTMENT USE ONLY

(4 marks)

3. Prove the identity $\frac{\sin^2 \theta}{1 - \cos \theta} = \frac{\sec \theta + 1}{\sec \theta}$ by expressing both the left side (L.S.) and the right side (R.S.) in terms of $\cos \theta$.

(ALL SUBSTITUTIONS AND PROCEDURES MUST BE SHOWN)

L.S.	R.S.

YOU HAVE NOW COMPLETED THE EXAMINATION. IF YOU HAVE TIME, YOU MAY WISH TO GO BACK AND CHECK YOUR ANSWERS.

MATHEMATICS 30
FORMULA SHEET

I. Trigonometry

1. $\pi = 3.14159$
2. $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$
3. $a^2 = b^2 + c^2 - 2bc \cos A$
4. $\sin^2 A + \cos^2 A = 1$
5. $1 + \tan^2 A = \sec^2 A$
6. $1 + \cot^2 A = \csc^2 A$
7. $\sin\left(\dfrac{\pi}{2} - \theta\right) = \cos\theta$
8. $\cos\left(\dfrac{\pi}{2} - \theta\right) = \sin\theta$
9. $\sin(A + B) = \sin A \cos B + \cos A \sin B$
10. $\sin(A - B) = \sin A \cos B - \cos A \sin B$
11. $\cos(A + B) = \cos A \cos B - \sin A \sin B$
12. $\cos(A - B) = \cos A \cos B + \sin A \sin B$
13. $\sin(-\theta) = -\sin\theta$
14. $\cos(-\theta) = \cos\theta$
15. $\tan(-\theta) = -\tan\theta$

II. Quadratic Relations

1. $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
2. $d = \dfrac{|Ax_1 + By_1 + C|}{\sqrt{A^2 + B^2}}$
3. $M\left(\dfrac{x_1 + x_2}{2}, \dfrac{y_1 + y_2}{2}\right)$
4. $(x - h)^2 + (y - k)^2 = r^2$
5. $x^2 + y^2 + Dx + Ey + F = 0$
6. $(y - k)^2 = 4p(x - h)$
7. $(x - h)^2 = 4p(y - k)$
8. $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} = 1,\ a^2 = b^2 + c^2$
9. $\dfrac{y^2}{a^2} + \dfrac{x^2}{b^2} = 1,\ a^2 = b^2 + c^2$
10. $\dfrac{x^2}{a^2} - \dfrac{y^2}{b^2} = 1,\ c^2 = a^2 + b^2$
11. $\dfrac{y^2}{a^2} - \dfrac{x^2}{b^2} = 1,\ c^2 = a^2 + b^2$

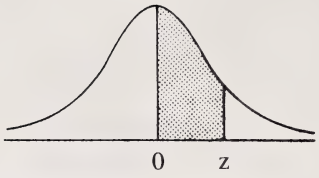
III. Sequences, Series, and Limits

1. $t_n = a + (n - 1)d$
2. $S_n = \dfrac{n(a + t_n)}{2}$
3. $S_n = \dfrac{n[2a + (n - 1)d]}{2}$
4. $A = P(1 + i)^n$
5. $t_n = ar^{n-1}$
6. $S_n = \dfrac{a(r^n - 1)}{r - 1}$
7. $S_n = \dfrac{rt_n - a}{r - 1}$
8. $S = \dfrac{a}{1 - r},\ -1 < r < 1$

IV. Statistics

1. $\mu = \dfrac{x_1 + x_2 + \ldots + x_n}{n}$
2. $\sigma = \sqrt{\dfrac{(x_1 - \mu)^2 + \ldots + (x_n - \mu)^2}{n}}$
3. $z = \dfrac{x - \mu}{\sigma}$

FOLD AND TEAR ALONG PERFORATION



AREAS UNDER THE STANDARD NORMAL CURVE

z	0	1	2	3	4	5	6	7	8	9
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0754
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2258	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2518	0.2549
0.7	0.2580	0.2612	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2996	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990
3.1	0.4990	0.4991	0.4991	0.4991	0.4992	0.4992	0.4992	0.4992	0.4993	0.4993
3.2	0.4993	0.4993	0.4994	0.4994	0.4994	0.4994	0.4994	0.4995	0.4995	0.4995
3.3	0.4995	0.4995	0.4995	0.4996	0.4996	0.4996	0.4996	0.4996	0.4996	0.4997
3.4	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4998
3.5	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998
3.6	0.4998	0.4998	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.7	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.8	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.9	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000

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